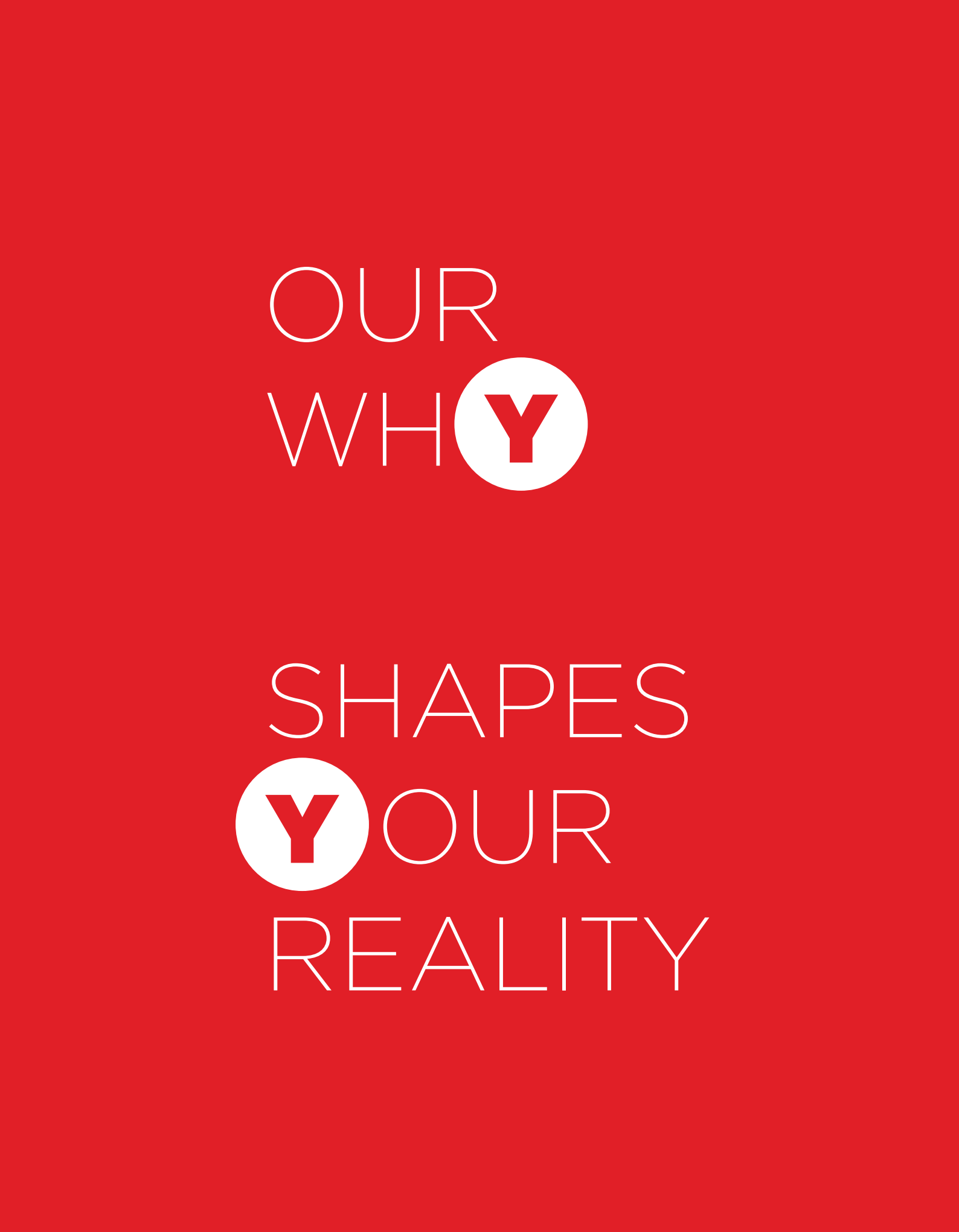
BRANZ

ANNUAL REVIEW 2018


Pulpy
ORANGE


OUR
WHY
SHAPES
YOUR
REALITY

CONTENTS


YOU

R YEAR

> This year we have achieved much and learnt much; worked hard and pushed hard; tested our thinking and explored new territories. We are ready, willing and prepared to tackle the challenges that lie ahead.

Chelydra Percy
CHIEF EXECUTIVE OFFICER

Welcome to the BRANZ Annual Review for 2017/18.

This review is an opportunity to reflect on the past 12 months, share the story of our contribution and achievements, and signal our priorities for the year ahead.

We do this in the context of the urgent realities of today and emerging challenges of tomorrow that face the building and construction industry and the people of New Zealand. Juggling these two demanding – sometimes conflicting – imperatives is a recurring thread that weaves through our story this year.

Expectations

Society's expectations of the built environment are expanding rapidly, far exceeding the building and construction sector's ability to keep up.

We see this impacting at both micro and macro levels, nationally and globally.

The built environment is being asked to meet much higher liveability standards than were acceptable a decade ago.

Buildings will be required to collect and clean water, generate and store energy and improve air quality.

Houses are incorporating new technology and playing an active part in the digital environment.

Communities are interacting with buildings in new ways. Residents overseas operate lights, house alarms, heating and kitchen ovens, from across town, via their smartphones. The expectation that buildings will deliver a suite of complex services is arriving faster than we thought possible a few years ago.

Only a decade ago, in 2007, Microsoft CEO, Steve Ballmer, said, "There's no chance that the iPhone is going to get any significant market share. No chance."

Now, global analysts forecast the pace of change will keep accelerating year by year.

Closer to home, the New Zealand Government launched an ambitious agenda in 2017 with better housing for New Zealanders at its very heart.

More affordable homes, healthier homes and enough homes to meet unmet housing demand are to be delivered within the decade.

Simultaneously city leaders are applauding the inaugural Sustainable Cities Index that ranks 50 leading cities around the world. Toronto leads the way. Wellington is ambitious to follow suit. Several local councils in New Zealand are developing sustainability targets for their built environments.

This should be an exciting time to be working in the building and construction industry.

The bigger picture

What we see, however, is an industry struggling to juggle the issues of today's operating environment and keep up, let alone get ahead of these fast-changing future expectations.

The past 12 months in New Zealand have seen unprecedented pressure on our building and construction services.

Demand continued to outstrip supply.

Growth in national building and construction is now forecast to be higher and to last longer than ever previously estimated.

The boom and bust cycle is morphing into a different oscillation of sustained demand for years to come.

This calls for big picture thinking and the courage to explore innovative change while not dropping any balls for work needed now.

Such pressures are common across many industry sectors. But while other industries have undergone enormous changes over the past few decades and grown in productivity, resilience and capability, the building and construction sector has struggled to innovate and modernise. The need for industry reform has become urgent.

Seeing this, BRANZ kicked off a bold piece of system-wide transformation work in March 2017.

Pulling together a cohort of industry leaders and drawing on the World Economic Forum's push for global reform of the industry, BRANZ forged the New Zealand Industry Transformation Agenda (ITA).

We see the ITA's systems approach to building and construction sector reform as promising the potential for truly transformative change.

Its goal is to shift New Zealand's building and construction industry from a sector struggling to meet current expectations to a system recognised for its agility, innovation and future focus, delivering enduring quality.

This aspiration was enthusiastically endorsed when the agenda was launched in August 2017 at the Registered Master Builder's Association conference, Constructive 17.

Since then, BRANZ has provided ITA start up resources for work in two of the ITA's six priority areas: risk and nextgen skills. We have provided the ITA website **www.industrytransformation.co.nz** and hosted a number of leadership conversations on driving transformative change.

To demonstrate what a transformative project might entail BRANZ continued the further development and testing of Artisan throughout the year.

Artisan will provide a virtual 'clerk of works' service to address quality assurance across the residential build process. With its ability to see, fix, verify and record each step in the build process Artisan promises to remove the need for at least 75% of on-site inspections. Ultimately, it will foster a culture of quality in those doing the work that is being recorded in real time and for all time.

Artisan has the potential to be transformative for all players in the residential build sector in New Zealand and an exemplar of benefits of industry transformation.

System wide change unlocking industry transformation requires concerted effort. It requires commitment, drive and determination. It calls for inspiration, innovation and the agility to juggle big picture thinking whilst attending to the urgent needs of today. It needs industry players working together, driving both long term and short-term goals.

> It is the most miserable thing to feel ashamed of home.
>
> Charles Dickens,
> GREAT EXPECTATIONS

National Science Challenge

Building Better Homes, Towns and Cities Ko ngā wā Kāinga hei Whakamāhorahora

BRANZ is proud to host the *Building Better Homes, Towns and Cities* | Ko ngā wā Kāinga hei Whakamāhorahora National Science Challenge. This is an important contribution of our research leadership role in New Zealand.

This Challenge is tasked with using researchers' skills and imagination to improve the quality and supply of housing and create smart and attractive urban environments.

It is dedicated to research that positions us for the future in which people can live affordable, productive, connected and culturally enriched lives. Its mission is research that helps to 'deliver homes and communities that are hospitable, productive and protective.'

Since inception in May 2016, *Building Better Homes, Towns and Cities* has been commended for its leadership, commitment to Vision Matauranga and success in building the 'best teams' – a core operating principle of all the Science Challenges.

During the past 12 months it has held two major conferences and several of its new knowledge outputs have achieved national prominence in media and industry circles. Ten papers have been published in peer reviewed international journals.

www.buildingbetter.nz

Addressing current realities

New Zealand is still struggling to achieve a high-performing built environment.

We need houses that are warm, dry, and healthy. We need classrooms, gyms, shops and workplaces that provide the best air quality available. We need buildings that are always safe. We need infrastructure that is fit for purpose.

This need is not being adequately met. We know this because BRANZ continues to analyse the results from its longitudinal research on the performance of houses in New Zealand. We have undertaken a national house condition survey every five years for the past two decades.

Results from our 2015/16 survey were released this year and made for grim reading. Almost half of our houses lack adequate insulation and are damp and mouldy. Ventilation and air quality is compromised.

These are systemic issues that cannot be solved by one or two agencies or sectors working in isolation.

We have welcomed the opportunity to use this research to inform recent significant developments that tackle such problems. These include the Healthy Homes Guarantee Act, the Residential Tenancies Act and the government's independent report, *A Stocktake of New Zealand's Housing*. We have also collaborated with Statistics New Zealand to add two new questions to the 2017 General Census to gather more data on housing dampness and mould.

Our longitudinal research is partnering with other seminal national, longitudinal research studies, such as Growing up in New Zealand.

We are working closely with MBIE and the sector on the KiwiBuild programme providing technical guidance on building quality homes that are energy efficient as well as the cost-benefits of exceeding the Building Code minimums.

We have driven a suite of nationwide studies on improving air quality, ventilation and moisture in buildings and shared this information with relevant agencies such as Education, Health, EECA, and Consumer New Zealand.

Anticipating the growth in demand for medium density housing (MDH), we completed research on acoustic concerns, tested cladding options and developed a liveability assessment tool for MDH developers and occupants

We have reshaped our industry-good research work into four interlinked programmes, with a focus on MDH in New Zealand, build quality, exceeding the minimum, and creating warmer drier healthier buildings.

In addition, we are preparing practical advice on how the sector can support New Zealand's transition to a zero-carbon economy by 2050. Buildings contribute 20% of New Zealand's greenhouse gas emissions – an estimate considered to be conservative as it excludes the production of construction materials and disposal of construction wastes. We have undertaken a significant body of research on environmental impacts and building performance in recent years which is forming a strong foundation for this work.

We increased our investment in research and knowledge dissemination to over $15 million, expanding the reach of our external partnerships by collaborating with more than 30 research, government and industry bodies.

This helped ensure our research continued to be translated into actionable accessible knowledge for industry players, influencers and decision makers to utilise.

Rewardingly, we have seen the impact of our research and advice on those working at the coalface with improved building practices again this year.

We have seen changes to building design resulting from our research on wind, corrosion, mould, acoustics, seismic resilience, passive fire resistance and timber cladding, to name a few.

As current realities bite and expectations on the sector continue to mount, the call on our expertise, our research knowledge and our leadership, is escalating.

We are determined to meet this call. We know our advice – informed by rigorous research and impeccable testing processes – can be trusted. It is relevant. And it is increasingly prescient.

Multi-unit housing represented

29%

of all dwelling units consented in 2016

It is expected to steadily increase its share to

38%

of all residential dwellings in 2022

Our expectations

The more detailed material in our Annual Review seeks to share stories that reflect the range of work we do, the impact we have made and the challenges we see ahead.

But what we mainly hope we show is that everything we do is fuelled by our passion and commitment to inspire and grow a high-performing building system that serves all New Zealanders.

This year, we have achieved much and learned much. We have worked hard and pushed ourselves hard. We have challenged our own thinking and charted new territories.

We are proud of our skilled and talented people, our sage Board members and our contribution towards a better built environment and quality of life in New Zealand.

We look forward to working with industry and government colleagues to meet the challenges and opportunities of the year ahead.

We will continue to have high expectations of ourselves and high expectations of our industry.

We will continue to juggle our commitment to address current realities while holding ourselves accountable to the future.

We invite all New Zealanders to join us in having great expectations of the built environment and its contribution to the wellbeing of New Zealand.

> Take nothing on its looks; take everything on evidence. There's no better rule
>
> Charles Dickens,
> GREAT EXPECTATIONS

Dr Helen Anderson, QSO
Chair

Chelydra Percy
Chief Executive Officer


YOU

WORK

Industry is being driven to change. Shifting societal expectations about how the built environment will support the way we want to live provides many challenges but more importantly it offers opportunity to do better. Our impartiality and independence enables us to discard the rose-tinted glasses, showing the reality of New Zealand's unique landscape. Our work supports industry to make well informed decisions based on evidence and reinforces the opportunity of better liveable environments meeting occupants needs now and into the future.

NEW ZEALAND'S REALITY

New Zealand – clean, green and a great place to bring up a family. This is the perception but what is the reality? Cracks have been appearing. Affordable quality housing is in demand and infrastructure is struggling to keep up. Our rental stock is fraying, classrooms are toxic and hospitals mouldy. Our unique environmental conditions also dictate how we build.

New Zealand is having to rush to deal with the hard reality that our housing and built environments are in crisis before it gets too late.

House Condition Survey – the true picture of New Zealand housing

The rose-tinted glasses are well and truly off for New Zealand. The spotlight is on our housing and the findings are not good. The number of affordable houses falls short of demand and many of those we do have don't meet even the minimum standard.

This is a picture that was well overdue to be told for New Zealand. For two decades BRANZ has been systematically building the picture of the state of New Zealand homes through our House Condition Survey. Now, more than ever, we have an independent impartial view that will not let us hide behind the she'll be right attitude. It demands action to drive improvement.

This work is a go-to source of information and findings have become a central part of the national conversation on housing.

Its influence can be seen in a series of initiatives including:

- supporting the effectiveness of Warm Up New Zealand, EECA's insulation retrofitting programme
- providing evidence for EECA'S consumer advice about home insulation on its Energywise website
- continuing to reinforce requirements of the amended Residential Tenancies Act (2016) for insulation and smoke alarms in state housing and rental properties.

CONTINUED ›

Strengthening the picture

Almost half of all houses lack adequate insulation and are damp and mouldy. Bedrooms – including ones occupied by children and the elderly – are unheated in 46% of homes. Nearly half of all dwellings have ceiling insulation below recommended levels. These facts from the survey are often quoted by government and media. This, on top of previous work that revealed rental properties nationwide were in poorer condition than owner-occupied, highlights the dim reality of New Zealand's housing stock.

Continuing to deepen the picture we have of New Zealand's housing stock is important if we are to understand where and how improvements can be made. This year the 2018 Census included two questions on housing dampness and mould – a new statistical category on house condition.

In further work alongside Ministry of Business, Innovation and Employment (MBIE), Statistics New Zealand (Stats NZ) and Land Information New Zealand (LINZ), BRANZ is undertaking a new approach to collecting housing data.

The pilot housing assessment survey will be run in conjunction with a major survey of New Zealanders' general wellbeing.

Stats NZ's General Social Survey, undertaken every two years, interviews more than 8000 people on their experience and circumstances across a wide range of social and economic outcomes. The 2018 version introduces a new section aimed at improving understanding of housing quality in New Zealand.

It will also ask participants to volunteer their homes for an independent assessment. This will focus on physical characteristics of the dwelling, including building size, insulation, heating and general condition.

53% could benefit from retrofitted insulation in the roof space and/or subfloor

47% had less than 120mm or insufficient coverage of insulation in the roof space

19% had insufficient coverage of insulation in the subfloor

MORE INFORMATION

www.branz.co.nz/hsc

Study reports

- BRANZ 2015 House Condition Survey: Comparison of house condition by tenure
- Warm, dry, healthy? Insights from the 2015 House Condition Survey on the presence of insulation, ventilation, heating and mould in New Zealand houses

Bulletin www.branz.co.nz/BU
Issue 619

Build Magazine www.buildmagazine.org.nz
Issues 159, 160, 161

Advising on quality to support KiwiBuild challenge

The spotlight is on accessible affordable housing for New Zealand.

The government wants solutions and has committed $2 billion for KiwiBuild, the programme aiming to deliver 100,000 affordable, quality homes for first home buyers in the next decade. Half of those homes will be in Auckland.

The Ministry of Business, Innovation and Employment (MBIE) is overseeing the KiwiBuild programme and is looking for answers on affordable quality solutions. BRANZ work is helping inform these solutions to ensure affordable quality homes that meet needs now and in the future.

Work from our four research programmes, alongside previous research on energy efficiency and the lifecycle assessment (LCA) approach to building will provide information needed as part of the government programme.

Influencing the influencers

Information needs to influence the right people at the right time to have impact.

- BRANZ work is cited extensively through the independent *Stocktake of New Zealand's Housing* report, commissioned by Minister of Housing and Urban Development Phil Twyford.
- MBIE used our heating, ventilation, draught-proofing, moisture control and drainage information in its submission for the Healthy Homes Guarantee Act.
- The Ministry of Education's programme Designing Quality Learning Spaces acknowledges our work on indoor air quality.
- BRANZ presented to health professionals how to achieve warmer, drier, healthier homes at the Ministry of Health's 'Healthier Homes Initiative' hui.

Corrosion standard exposed in sulphur city

The uniqueness of New Zealand's environment has an impact on our built environment like no other place in the world.

The exposure to the elements and the extreme nature of fault lines and geothermal activity make it difficult and risky to rely on global standards not based on New Zealand evidence.

Working with local power companies, materials providers and the local councils BRANZ is looking to improve building and infrastructure performance in our most challenging environments like Rotorua.

Reliance on the global standard of 50 metres separation between exposed building materials and any geothermal source is not nearly enough for the reality of Rotorua's unique environment. Work looking into material corrosion rates in the area is challenging the current New Zealand standard for timber-framed buildings. Atmospheric corrosivity was present up to 3000 metres from the geothermal source. This highlights how inadequate the global standard of just 50 metres is for Rotorua. Recommendations that the localised boundary be extended to 500 metres for the area have since been accepted.

As a result of Rotorua's high sulphur concentrations, especially in and around the central city, metals such as mild steel, zinc and copper show excessive atmospheric corrosivity. This, in turn, means higher building and infrastructure costs as materials break down far more quickly. Work is now underway to create a building materials corrosion rate database that will help inform the best materials to use in areas such as Rotorua and the Bay of Plenty.

MORE INFORMATION

Research Now www.branz.co.nz

Geothermal corrosion 1: Metals sensitive to corrosion

Geothermal corrosion 2: Distance effects of corrosion

Geothermal corrosion 3: Discolouration of wood

Geothermal corrosion 4: Performance of aluminium-zinc alloy coating

Build Magazine www.buildmagazine.org.nz
Issue 159

Scoping contamination of building materials

Chemical contamination of our homes and the resultant health risks is an ongoing issue.

The fear and uncertainty surrounding meth contamination caused a reaction so strong that many homes were closed up and the costs of remediation spiralled. The lack of a standard methodology for testing the level of contamination meant fear drove the response and without evidence the industry that sprung up to help was unregulated and uncontrolled.

Meth is not the first, nor will it be the last, chemical contaminant that potentially puts building occupants at risk. We need to be able to ensure our homes are healthy especially for our most vulnerable. As part of our better building health work BRANZ scientists identified a need to understand how materials behave following contaminants exposure, alongside the impact of the remedial decontamination on building materials performance.

But to do this controlled laboratory-based research involving these products requires a method to quantify and reproduce contamination of materials.

BRANZ is developing a standardised way of dispersing vaporous/gaseous contamination of materials. This will remove confusion and potential fear by providing an evidence based solution to any future risk involving chemical contamination. In turn this will improve testing methodologies for assessing how chemical contamination and decontamination affects materials, and ultimately occupant health and building performance.

LIVEABLE ENVIRONMENTS

Our buildings are more than just the walls. They form part of the environment in which we live, work, learn, play, conduct business and move around.

Important concerns are our safety, health and comfort as well as the long-term sustainability of structures. However, there are many practical barriers to overcome before we can realise this vision.

Prioritising liveable MDH homes

The landscape of New Zealand homes and communities is changing. Medium density housing (MDH) will increasingly feature in New Zealand's housing picture.

However, industry needs to overcome a history of poor quality and bad design if the public is to be convinced.

Concerns about quality, safety, acoustics and even visual appeal are all front of mind when looking at MDH. Understanding and considering the concerns of the public will support future developments delivering liveable environments that meet the needs of those living in them. A new BRANZ MDH framework will assess 40-plus criteria of liveability and sustainability. Delivering on these criteria will create a quality standard that ensures MDH works for, and is better accepted, in New Zealand.

The assessment includes building quality, transport connectivity, storage, noise control, privacy, shared facilities, outdoor spaces, security, ability to personalise a dwelling and capacity for community engagement. It also evaluates aspects of sustainability including light, warmth and dryness, energy-efficiency, water supply and recycling.

This helps drive understanding of where developments can better perform and what practical issues need to be solved. Importantly, the views of occupying residents can be included to counterbalance developer's perceptions and help build a real picture of living within MDH.

CONTINUED ›

New Zealand concerns

To assist industry to build medium-density housing that is desirable and seen as quality means looking at some key concerns of New Zealanders. Two of the main public concerns that came out of earlier BRANZ work were acoustics and façades.

Both these topics have been in the information shared with MBIE as part of the KiwiBuild programme.

Acoustics guidance

The way we live today increasingly creates more noise for those living around us. Neighbours' sound systems; heating, air-conditioning and ventilation systems; plumbing; and exterior vehicle or pedestrian traffic all add to the nuisance noise that as a community we want to keep from disturbing our home lives.

As the urban housing landscape is transformed, New Zealand's 30-year-old acoustics regulations need revisiting. Looking at a range of guidance and techniques for achieving minimum sound-insulation requirements under the Building Code has been a priority for BRANZ as part of the medium-density housing programme.

Testing cladding performance

Looking to improve performance and support faster consenting processes BRANZ researchers worked with the industry to assess various residential cladding. Acceptable solutions currently only apply to low-rise buildings, and New Zealand lacks experience with systems used on taller buildings.

How the cladding types perform under loads typical of taller buildings, such as wind speed, seismic movement, air infiltration and water entry are all key for the New Zealand environment. New Zealand's liveable environments will improve if work continues to inform test standards and verification methods, encouraging innovation among the design community. It is through this that confidence will be built to extend traditional low-rise cladding beyond its normal scope. All this supports building more acceptable buildings that New Zealanders will want to live in.

MORE INFORMATION

www.branz.co.nz/mdh

Study Reports

ER30A Acoustical design of medium density housing

ER30B Acoustical design of medium density housing – Appendix G

BRANZ Facts: Medium-density housing series

- What is medium-density housing?
- Supply and demand
- Attitudes towards MDH
- Consents
- Acoustic performance
- Maintenance
- Fire safety
- Specified systems and building warrants of fitness

Build Magazine www.buildmagazine.org.nz
Issue 165

Build to rent – a different perspective

Today's tough housing market has resulted in a growing need for rentals.

BRANZ work predicts a marked increase in non-traditional renting groups such as over-65s and multi-family households in particular.

To cope with this growing demand New Zealand must act now to ensure tenants are safeguarded in good quality rental accommodation that they can call home.

Our Building to rent study challenged the traditional New Zealand rental options. Exploring and adopting a variety of options for rental housing – both new and existing – could improve quality and liveability without making it unaffordable.

This work challenges developers, landlords and tenants to think differently about how rentals are developed. It proposed a variety of options that would see a marked shift in the way rentals were offered in New Zealand.

Suggested alternative approaches included:

- a 'shell and fit-out' model as a viable option. In this model, the landlord rents out the shell of a building for 10 years and the tenant is responsible for the internal fit-out
- 'real-estate investment trusts', which provide capital for development and long-term ownership of property
- 'energy performance certificates' to encourage landlords to undertake energy-efficient improvements
- larger rental houses to meet the growing demand from multi-family households
- incorporation of lifetime design features to cater for physically impaired tenants or over-65s.

MORE INFORMATION

Study reports www.branz.nz
SR 390 Building to rent

Research Now
Building to rent 1: Issues for owners of rental properties

Building to rent 2: Issues for regulators

Build Magazine www.buildmagazine.org.nz
Issue 165

Rainwater, greywater systems point to savings

New Zealand's perception of an unlimited supply of clean usable water has been challenged. Rivers that aren't safe to swim in, failing water systems and towns having to boil water to stay safe regularly make headlines.

Climate change, aging reticulation systems and a growing population means our water supply is under pressure.

As a country New Zealand must get smarter about how it manages natural resources. We need to look for solutions now before we reach crisis point.

Could installing rainwater-harvesting and greywater-recycling systems in commercial buildings reduce the load on New Zealand's water network? Greywater is wastewater from baths, showers, hand basins and tubs. Rainwater harvesting systems typically collect rainwater and store it for future use.

BRANZ monitored rainwater harvesting systems across eight commercial properties to see if the benefits made commercial sense. Annual harvested rainwater use varied across the properties ranging from 309–23,525 kL/year. At the high end 23,525 kL is the equivalent of harvesting around nine Olympic swimming pools of water.

If this water was used for such things as flushing toilets and urinals this indicates a potential average saving of 23% of water from the New Zealand water network. Water for these uses isn't treated to the quality of drinking water, which means there could also be financial and energy savings for our water treatment and transport systems.

To establish water solutions that benefit all of New Zealand a better understanding of the risks around water quality and associated concerns of waterborne diseases is vital. BRANZ has a series of water system focused projects underway to better prepare New Zealand for sustainable use of our water supply.

MORE INFORMATION

Study reports

382 – Drivers and barriers to rainwater and greywater uptake in New Zealand

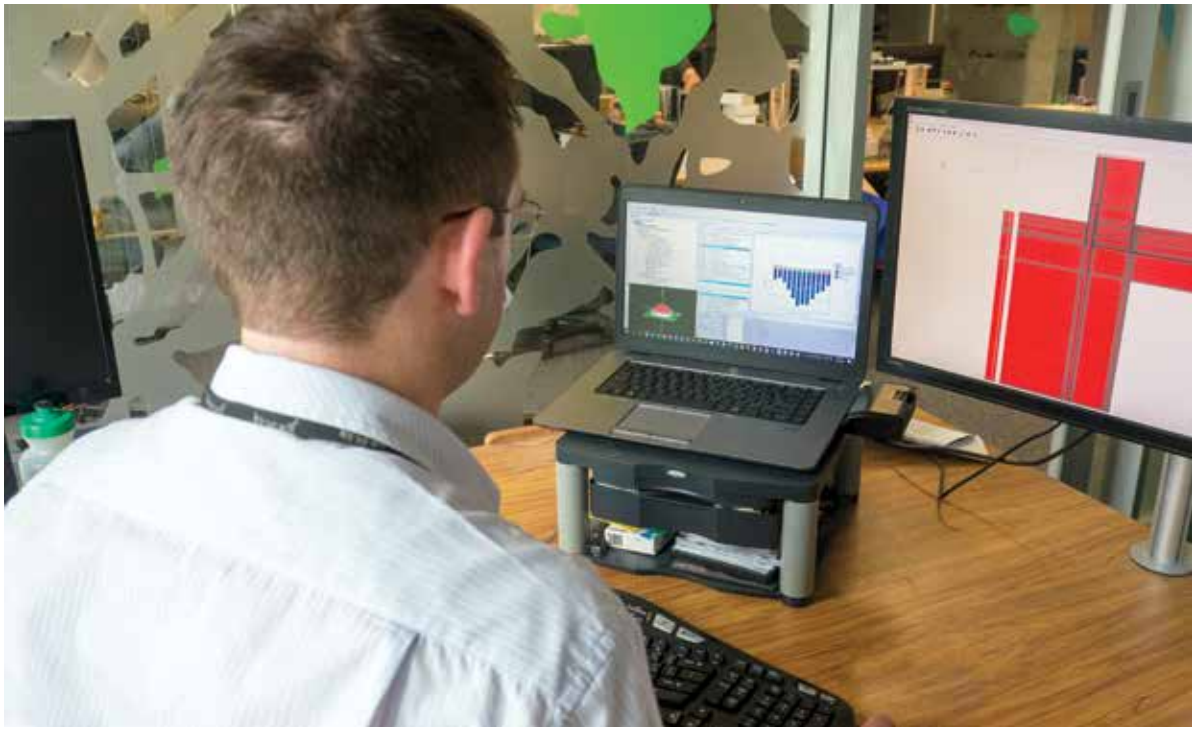
383 – Performance of commercial rainwater and greywater systems

384 – Calculating potential network savings through employing rainwater and greywater systems

BRANZ Facts www.branz.co.nz

Harnessing Rainwater and Greywater series

Video www.branz.youtube.com



Combating buildings biggest health risk – mould

Mould is a high-profile serious health issue within our buildings. And this year with revelations about unliveable rental properties and decay at Middlemore Hospital it has been in the media spotlight more than ever.

Mould is a key indicator of poor living conditions and a major contributor in health issues for those within. A number of factors contribute to mould build up but one thing is fundamental to combating it – ventilation.

Our work modelling ventilation within walls is focused on reducing mould problems in future building.

Understanding the amount of moisture present in wall cavities is a key issue. We have enhanced a German ventilation modelling system that assists manufacturers designers and specifiers, to better determine how building materials will react to moisture and the life expectancy of systems used within buildings. As the New Zealand market pushes for higher-specified buildings, the ventilation model will contribute to benchmarks for potential Building Code revisions.

MORE INFORMATION

Bulletin **www.branz.co.nz**
624

Video **www.youtube.com**
The Building Envelope and WUFI

BRANZ helps ensure fail-safe launch for bridge

Our liveable environment stretches beyond the buildings we live in. Our built environment is also made up of systems we use to get between work, play and home.

This year BRANZ structural engineers and material-testing scientists joined forces to find a safe and sustainable way to launch a new bridge over a motorway.

The joint venture for the Transmission Gully motorway extension, north of Wellington, approached BRANZ for help with a 226-metre-long three-span bridge over Cannons Creek. The spans will be pre-constructed and launched from one side of the valley. This involves sliding 44 steel girders over five separate rocker supports to their final resting position.

BRANZ's initial brief was to understand how the launch would affect the structure's steel coatings as the steel beams slid over the rockers and how much friction needed to be overcome. Two coatings systems were expected to be tested: one with sealer applied over a thermal zinc spray coating and one without. The BRANZ team had to design the equipment that replicated the sliding parameters and associated launch force, and measured damage to the coatings.

Early on, the team faced a challenge when the launch approach was amended. The client changed the sliding process to one that yielded no movement at the rubber/steel interface and minimal friction forces. They also chose to test only the thick thermal zinc spray coating and sealer. This necessitated a redesign of the BRANZ test rig.

Laboratory modelling of the launch process demonstrated that it would not damage the coating on the steel beams. The results also confirmed friction coefficients acceptable to the Transmission Gully team so they could finalise design of their launch equipment. The bridge will be installed in 2018 as part of the ongoing major infrastructure project due for completion in 2020.

Fire expertise keeping you safe wherever you are

Auckland's Waterview Tunnels are designed to have millions of vehicles and passengers passing through each year.

The expertise of the BRANZ fire team was used to put the controls of the fire-safety response system through its paces to ensure those journeys are taken safely.

The BRANZ fire team ran a series of hot smoke tests inside the tunnels to ensure the self-regulating fire system worked. The tests used cold non-toxic pyrotechnic smoke that wouldn't leave any soot deposits and a clean-burning fire to heat the smoke so it would perform like buoyant real-fire smoke. The heating was controlled so as not to damage the sensitive lights and fire-detection system in the tunnels.

The NZ Transport Agency's 2.4-kilometre twin tunnels, the longest road tunnels in New Zealand, are monitored by dedicated staff. BRANZ's testing was part of the final commissioning verifications of the fire safety systems.

See page 33 for further information on fire research.

MORE INFORMATION

Fire software www.branz.co.nz

B-Risk – design fire tool

BRANZFIRE – zone model

BRANZ TR8 – concrete floor systems

BRANZ TR9 – timber framed wall or floor/ceiling systems

INFORMING YOUR DECISIONS

The problems we have today, cannot be solved by thinking the way we thought when we created them.

ALBERT EINSTEIN

Identifying emerging issues, current trends and future needs means BRANZ is here to support you with expertise and good evidence to enable informed decisions that benefit occupants now and in the future.

Information supporting good decisions

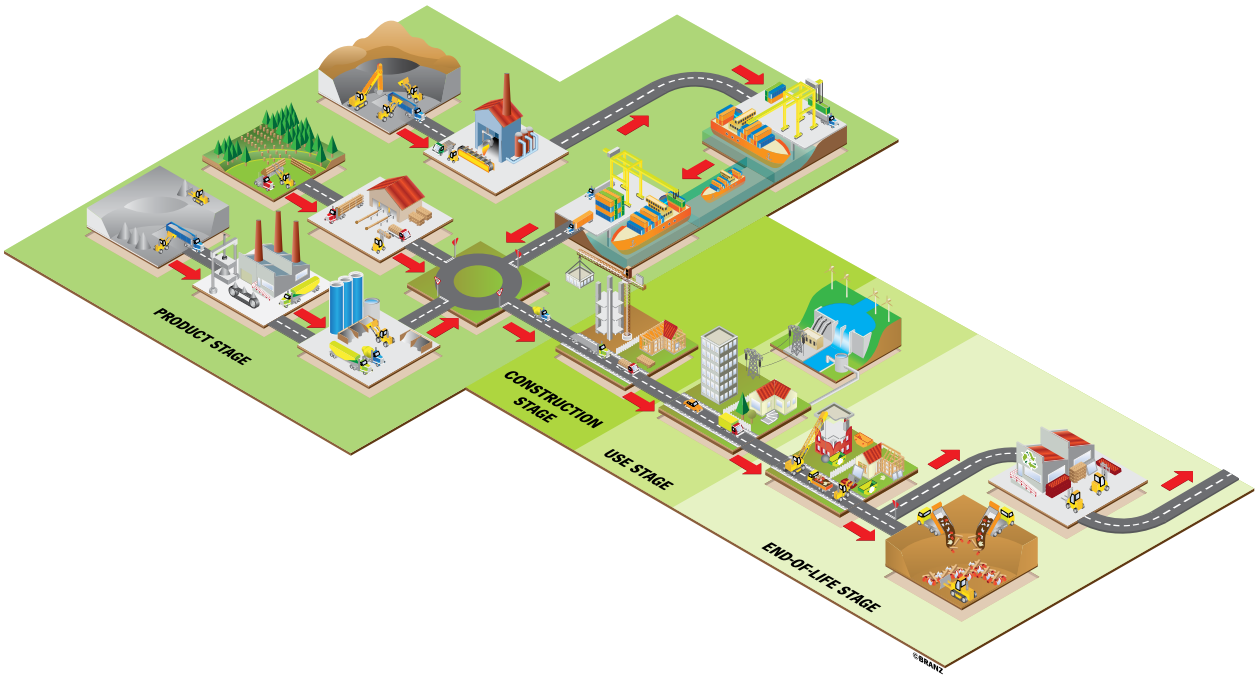
New Zealand's performance based Building Code sets out the minimum compliance requirements for our buildings. However, if we want high performing buildings now and into the future then clients need to understand to ask for more.

Having the right information to support these decisions means industry can influence and support better choices from clients.

Clients have to negotiate a maze of choices. Often decisions are made putting cost before quality, asset value before healthiness, and large open plan spaces over smaller warmer ones without thinking about the long-term building performance.

Industry's challenge is to provide information that is easy to understand and helps clients make well informed future focused decisions if New Zealand wants to build beyond the Code. To help industry, BRANZ is continuing to focus on the evidence needed to show the health and future cost benefits of going beyond Code now.

Where clients and builders both share values such as sustainability there is a better chance on choosing to exceed the Code-minimum standards. But consumers often lack the shared language to discuss building products and design specifications with builders. This leads to miscommunication over which building features to include and whether to exceed the Building Code. Improving the lines of communication between builders and clients with the support of good information will mean better buildings that provide great liveable environments long term.



Promoting zero-carbon in building design

If New Zealand is to meet our zero-carbon goals the building industry needs to support better informed decisions about the products and materials used in our buildings.

Through the development of a New Zealand focused whole-building whole-of-life framework BRANZ is assisting designers to better understand the lifecycle environmental impacts of buildings. Focused initially on the commercial sector, the framework contains information and resources quantifying the lifecycle environmental impacts of buildings. As part of this, BRANZ developed LCAQuick – Office, a free Excel-based tool that can be used for calculating environmental impacts of specific designs across the building lifecycle.

The BRANZ team is working alongside several industrial developments throughout New Zealand which are implementing life cycle assessment through the tool. Gisborne Airport, Transpower's Wellington CBD office, and an office development in the Wynyard Quarter at the western edge of the Auckland waterfront, are all projects using LCAQuick.

A residential version of LCAQuick is expected to be available later in 2018 to help better inform sustainable developments.

MORE INFORMATION

Study report www.branz.co.nz
SR350 – Whole building whole of life framework: Development of reference office buildings for use in early design

SR351 – New Zealand whole-building whole-of-life framework: Development of datasheets to support building life cycle assessment

Bulletin www.branz.co.nz/bulletins
608

Video www.youtube.com
Building Life Cycle Assessment: Introduction

Understanding risk to evaluating firestopping compliance

Over the life of a building work is done to fix, alter and remediate issues.

These sometimes small elements of work, done in isolation can compound to compromise the integrity and safety of our buildings.

When buildings are altered or remediated, for example during weathertightness remediation, there is an opportunity to assess completed work and understand where and what the risks may be. This work often means new consents, in turn triggering a requirement for the means of escape from fire in the building to comply 'as near as reasonably practicable' (ANARP) with requirements.

BRANZ's fire researchers developed a passive fire risk assessment process that systematically evaluates the risk of potentially non-compliant firestopping in existing buildings. It is this knowledge that helps building inspectors, project managers and fire engineers with their decision-making processes. The passive fire risk assessment process is available on the BRANZ website and enables ongoing risk management and monitoring.

Fire roadmap clarifies priorities

BRANZ, together with several major players in the New Zealand fire industry, is revisiting the *NZ Fire Research Roadmap* first developed in 2012. To ensure the safety of occupants it is vital fire research is responsive to urgent and emerging issues, such as the Grenfell disaster. Industry needs up to date information to mitigated risks. The Fire Research Stakeholder Group includes New Zealand professional and industry associations, research providers, local and central government bodies and the insurance industry, as well as international fire experts.

The group reviews emerging issues and sets priorities for future fire research to reduce the social, economic and environmental impact of building fires in New Zealand. Enabling cross industry interaction means our fire researchers work alongside others to deliver timely and relevant information that could save lives.

The roadmap will be published later in 2018.

Asbestos in soil guidance launched

When dealing with substances that have major health implications you want clear information on what to do. So, when BRANZ discovered major gaps in information to help with asbestos contamination in soil something had to be done.

This year, saw the culmination of years of work, collaboration and consultation when the first New Zealand Guidelines for assessing and managing asbestos in soil were launched at the WasteMINZ conference.

Working closely with the Australasian Land and Groundwater Association (ALGA), BRANZ developed how-to guidelines for end-to-end management of asbestos in soil. The guidelines ranged from identifying the problem through to completed remediation. The aim is to provide consistency and enable compliance with regulations for industry practitioners.

Following the technical guidelines BRANZ also developed a guide for businesses, outlining industry roles and responsibilities in the management of asbestos. The guidelines are now also referenced in information from WorkSafe, MoH and MfE.

MORE INFORMATION

Publications www.branz.co.nz/asbestos

Guidelines for assessing and managing asbestos in soil

Asbestos in soil: a guide for workplaces

Build Magazine www.buildmagazine.org.nz
Issue 164

Peace of mind on product compliance

In times when industry is booming, providing buildings faster without risking quality is vital to keep market confidence. That is why the focus on the conformance, or not, of products is increasingly becoming a concern.

Whether it is steel reinforcing, insulation, roofing tiles, windows or any other building product, the cost of non-compliant and underperforming products has the potential to cost New Zealand millions. Previous BRANZ work estimated that the cost of non-conforming work could be as high as $232 million.

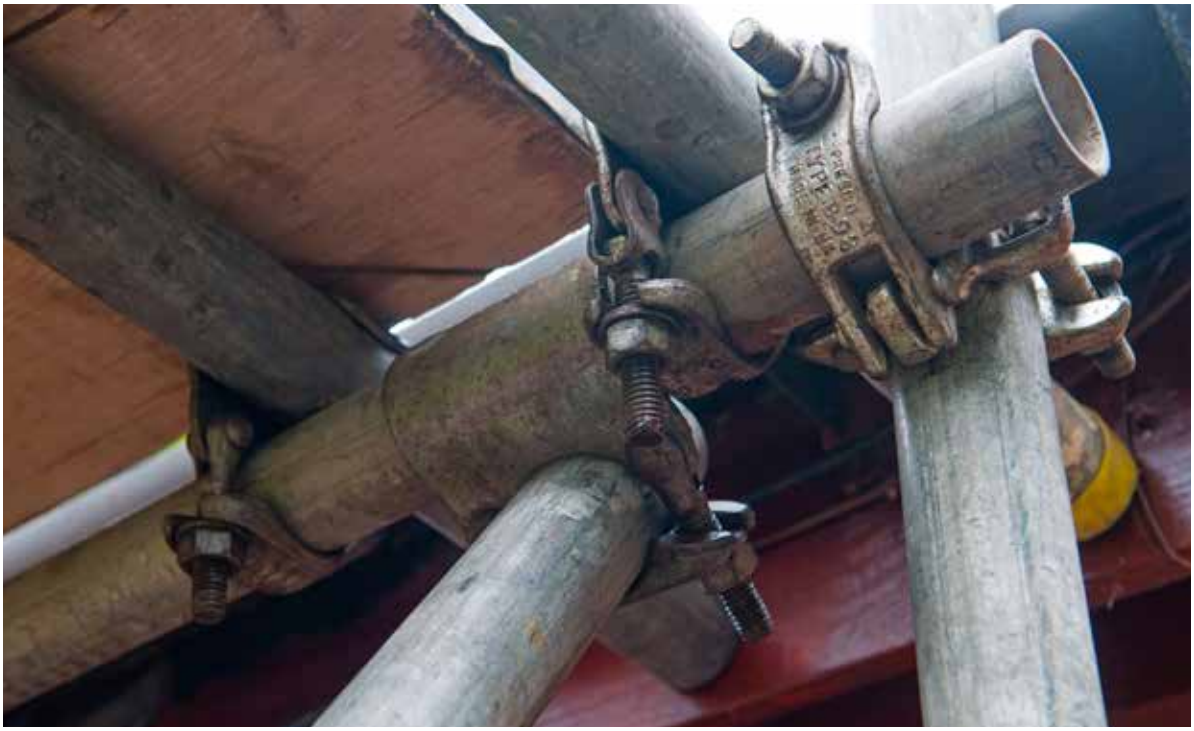
New Zealand's regulations and compliance options exist to support quality products getting to market, minimising risk in product and system selection, and giving customers peace of mind.

This year BRANZ strengthened its consultancy service offering by adding CodeMark to its suite of compliance services. As part of the Ministry of Business, Innovation and Employment (MBIE) product certification scheme, CodeMark enables BRANZ to deliver end to end solutions to meet all product assurance needs.

Auckland-based Thermakraft, a leading New Zealand manufacturer of synthetic roof and wall underlay products was presented with the first ever BRANZ CodeMark alongside the 1000th BRANZ Appraisal.

MORE INFORMATION

Compliance & Evaluations Services
www.branz.co.nz/findcertificates



Running the cost-benefit rule over scaffolding

Understanding the full implications of change can take time. In the case of the working at heights guidelines introduced by WorkSafe in 2012 there were questions about whether the safety benefits were worth the proposed extra cost to the industry.

Working closely with WorkSafe and the Ministry of Business, Innovation and Employment (MBIE), BRANZ undertook a detailed cost-benefit analysis to understand the benefits of the working at heights guidance. The report revealed there are safety, productivity and inspection benefits from using scaffolding for working at heights for all single storey new builds. However, the cost of using scaffolding was found to be greater than the benefits but with scope for reducing the gap.

By better understanding the health-and-safety impacts, the work forecast that over two decades the industry could avoid 13 deaths, 401 severe injuries and 549 non-severe injuries.

A complementary nation-wide survey examined the actual costs to builders of using scaffolding on single storey buildings. While it showed big variations depending on region and size or complexity of the building those costs were partly offset by increased productivity for builders on the job.

MBIE and WorkSafe will do further work with industry on the back of this research, including prioritising a review of the regulations and working with industry to improve the guidance.

MORE INFORMATION

Study report
ER24 – Falling from heights Cost benefit analysis of scaffolding for single storey houses

Build Magazine www.buildmagazine.org.nz
Issue 163

Leading the conversation

One of industry's challenges is to keep on top of the information needed to support good decisions that benefit building owners and occupants.

Bringing industry together face to face to inform, educate and challenge is one of the best ways to lead thinking that brings about change and encourages innovation.

This year BRANZ regularly took the opportunity to share with industry at all levels, across a variety of events both organised by BRANZ and industry. Seminars are a regular feature of the BRANZ year. Alongside these several key events were organised by BRANZ.

Our workplace – open for business, explored what a locally centred, moderate seismic event might mean for commercial building owners and tenants, building designers and practitioners. BRANZ, together with the Insurance Council, Wellington City Council and the Earthquake Commission reflected lessons from the 2013 Seddon and 2016 Kaikōura quakes. BRANZ reinforced the importance of the minimum Building Act requirements for restraint of non-structural elements in new and existing buildings. Ensuring these are quake-assessed is key to the safety of occupants and are often overlooked.

The *Indoor Air Quality Workshop* was jointly hosted with Massey University in Auckland. The one-day workshop brought together building industry practitioners, researchers, government policymakers, medical professionals and manufacturers. Topics included how to educate the public on good ventilation behaviour, Building Code provisions and energy-rating tools, measurement of airtightness in new builds, and barriers to achieving healthy indoor environments.

In March 2018, BRANZ gathered national and international experts in Wellington for The Air Infiltration and Ventilation Centre (AIVC) symposium *Towards Higher-Performing Buildings: The role of airtightness and ventilation*. The symposium focussed on improving quality of airtightness and ventilation in our homes and schools, and how poor-performing buildings affect energy usage and occupants' health.

MORE INFORMATION

www.branz.arlo.co/find-a-course

NEXT GENERATION

As the young start thinking about what sort of buildings they will enjoy, BRANZ is keen to nurture this talent to take charge of their own built environments.

Whether they are collecting data, collaborating on a vision or seeking answers, by supporting our young in science they will develop a sense of ownership of the environment in which they live.

A chance to hear children's voices

Involving children in research within their own environments strengthens their connection and understanding of the buildings in which they spend their time.

Whether at school or home, bringing science to life could also inspire these junior researchers to become the next generation of scientists and engineers.

The health and wellbeing of our children's indoor environment is increasingly a focus of research. BRANZ funded two studies that took this a step further, directly involving children in the research by having them monitor their homes and schools.

The University of Auckland project, *Keeping our children warm and dry*, is using a group of children already part of the longitudinal study Growing Up in New Zealand.

By measuring and recording temperature and humidity in their own 'time use diary' these children will help us build a picture of the living conditions in New Zealand homes across the country. This will enable a better understanding of how indoor environments affect the long-term health and wellbeing of our children.

Interactive air readings

Another group of young researchers are using the specially designed School Monitobox, or 'SKOMOBO' that both studies the school indoor environment and turns this into a lesson. Developed by a team from Massey University the device is installed in classrooms to monitor temperature, humidity, particulate matter and carbon dioxide levels. Aimed at students aged 6 to 10, with the help of an interactive touch screen the SKOMOBO teaches them all about the classroom environment based on real-time readings.

The boxes have been installed in 37 classrooms in Auckland, Wellington, Christchurch and Dunedin. The information will form a baseline for indoor climate of our classroom environment. This will support the Ministry of Education in future work, including the Designing Quality Learning Spaces: Indoor Air Quality programme and thermal comfort guidelines.

Vision of farm-to-table village

The construction industry is a complex system made up of a variety of skill sets and roles. For those looking to enter the industry having a better understanding of the needs and different roles can improve the working relationships and the work they do.

ArchEngBuild brings together 30 architecture, engineering and construction management students. Teams this year were given a fictional scenario where they had to pitch a concept design for an 'Incremental Village' as part of the Council's 2030 Live+Work On The Edge economic development project. They designed half-built homes that could be completed by individual owners for various purposes, incorporating working space and shared community space.

The winning team of Annie Tong (architect), Callum Lamont (engineer) and Sanjeev Ganda (construction manager) created a stunning and functional community called Farm to Table (pictured).

ArchEngBuild is now in its seventh year. It was originally conceived by the Cement and Concrete Association who continue to sponsor the event. It is now also sponsored by BRANZ through the Building Research Levy, Engineered Wood Products Association of Australasia, New Zealand Timber Design Society, and Wood Processors and Manufacturers Association of New Zealand. It is also supported by the New Zealand Institute of Architects, Engineering New Zealand, the Heavy Engineering Research Association and the New Zealand Institute of Building.

MORE INFORMATION

Video https://www.youtube.com

Scholarships look to future

Each year, BRANZ looks to the future by investing in outstanding postgraduate scholars in New Zealand tertiary institutions. The scholarship programme adds diversity to BRANZ's portfolio of investments, supports future research and strengthens BRANZ's relationship's with tertiary education.

The scholars must show how their research will inspire the building and construction industry to provide better buildings for New Zealanders.

Scholars with outstanding academic credentials and early-stage researchers pursuing innovative projects can apply for scholarships of up to $25,000 a year for three years. Typically, master's students gain one-year scholarships and PhD students three-year terms.

This year, BRANZ allocated $250,000 to support a cohort of 20 postgraduate scholarships, including seven that began in 2017.

Beth Noble
Victoria University of Wellington (master's)

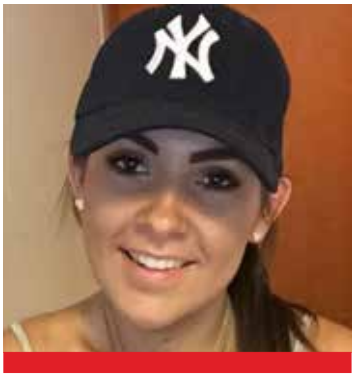
Accessible design covers the spectrum

Beth Noble came to the field of building science through a life-long interest in how things work and fit together. Supported through a BRANZ scholarship, she decided to incorporate her autism spectrum disorder into her master's thesis. It investigated whether this disorder is exacerbated by poorly performing indoor environments.

"While our Building Code outlines the importance of a built environment that is accessible to people of all abilities and function, there is often a large gap between the intentions of this and the built environment as it currently is," Beth says. "Accessibility in the built environment is a wider issue than simply the installation of ramps and lifts."

She says the BRANZ scholarship has been valuable for the advice from various BRANZ specialists and for helping her meet project milestones.

Beth is now embarking on her PhD research into the effects of artificial lighting systems on people on the autism spectrum. She sees her future in the design of built environments for accessibility.



Amber Haddock

Victoria University of Wellington (master's)

Amber's research investigates current practices in asset and facilities management and whether building information modelling (BIM) can be an improved solution for asset management. It will identify a best method across a range of different uses. This will allow a comparison with a BIM asset and facility management framework and identify the strengths and weaknesses in both. It will identify best practice of asset and facilities management for the foreseeable future and recognise any areas for further development.

Vicky Southworth

University of Canterbury (master's)

Excess stormwater problems are likely to worsen with climate change and densification of our cities. A range of devices and materials that mimic natural processes are now available, collectively known as water-sensitive urban design (WSUD). To be effective, this needs to be implemented widely. There are examples of WSUD in recent large-scale developments around Christchurch. Vicky's research will quantify the benefits of including water-sensitive urban design in small-scale or individual developments and refurbishment projects. It will then investigate how we can increase the uptake of water-sensitive options.

Rochelle Ade

University of Auckland (PhD)

Rochelle's work will compile a database allowing water and energy use of New Zealand homes to be benchmarked against each other. This will in turn enable comparison of the actual performance of Homestar-rated houses with predicted performance in the Homestar rating tool. By understanding what guidance, support and tools are needed, the industry can benefit more from sustainability. This includes benchmarking of sector performance from a whole-of-life perspective. The research also hopes to establish benchmarks of indoor environmental quality performance.

Cara Askew

Victoria University of Wellington (master's)

Cara's research proposes that the energy efficiency of non-residential buildings is not confined to the application of efficient or renewable technologies. The key is in how they are effectively controlled to meet the needs of the building occupants as efficiently as possible. Building management systems (BMSs) provide this opportunity. However, the energy management capabilities of BMSs are typically left unoptimised. The project aims to define the usability and utilisation of BMSs in New Zealand's non-residential building stock. This will identify barriers to optimising building energy performance.

Dan Court-Patience

University of Canterbury (master's)

Buckling restrained braces (BRBs) have become an attractive method for resisting seismic loads in steel structures. However, BRB structures have been little tested where force is applied in two horizontal directions, as can occur during an earthquake. Dan's research will look at the performance of realistic BRB systems subject to two-dimensional horizontal shaking. He will focus on ground-floor frames where demands and consequence of failure are greatest.

Philip Penn

Victoria University of Wellington (master's)

Philip's research will encompass the BIM tools for lifecycle assessment (LCA) developed by BRANZ for residential housing. More specifically, it will explore how different levels of the BIM model detail and design affect accuracy when calculating the building lifecycle inventory (LCI). The thesis will briefly consider issues in the development and use of LCI material coefficients.


YOU

R

GOVERNANCE

The purpose of corporate governance is to facilitate effective, entrepreneurial and prudent management that can deliver long-term success. It is the framework that allows for a company to be directed and controlled, and ensures that those who direct and control the company do so accountably. This framework of policies, procedures and practices (and related systems) allows a business to operate effectively, responsively, ethically and compliantly, while controlling risk. In many respects, it is about positioning the business to be sustainable.

OUR ROLE

Inspiring the industry to provide better buildings for New Zealanders.

Showing leadership, good management and a passion for lifting standards, challenging the status quo and driving the sector forward are all fundamental to the work we do. At it's heart our work:

- helps industry to identify and solve challenges
- transforms insightful research into accessible actionable knowledge
- is focused on reducing the total ownership cost of quality buildings.

We are focused on challenging ourselves to deliver work that inspires industry to provide better buildings for New Zealanders.

Wise stewardship

Our commitment to robust decision-making processes, transparency and disciplined management of Levy investments means New Zealand can rely on wise stewardship of the Building Research Levy.

Important in determining the focus of the Levy spending is our connection with industry and the work we undertake to identify current and emerging issues. In 2017/18, BRANZ invested $15,200,000 in research and knowledge dissemination across a total of 200 projects. These are delivered by BRANZ's specialist research teams and knowledge-transfer experts, alongside more than 30 other research organisations.

Our research focus is currently on four key themes that support current issues within the industry. It is vital however, BRANZ maintains the flexibility to respond to emerging industry issues with out-of-cycle research and guidance.

Industry-good research & knowledge dissemination

Inspiring the industry to provide better buildings for New Zealanders is at the heart of the work we do. Robust science, provides independent, impartial advice to meet the demands of an evolving building industry and a shifting built-environment landscape.

Our team of scientists and engineers are passionate about New Zealand's built environment and continues to build our research priorities through four interlinked programmes. These programmes cover: preparing for medium-density housing; exceeding the minimum; eliminating issues of quality; and creating warmer, drier, healthier buildings. This is in addition to projects on fire and structural research, social and behavioural research and materials performance research as meets the emerging issues faced by industry.

Consultancy support

Underpinning BRANZ's quality testing, independent assessment and certification experience is five decades of BRANZ research and testing work. This experience forms the basis of the robust processes, rigorous testing and the high-quality standard of all BRANZ consulting work.

Our impartial and independent assessment and testing of products and systems plays a key role in promoting quality within industry. It also helps clients demonstrate compliance with the New Zealand Building Code.

We are committed to ensuring clients can successfully apply the knowledge gained from working with BRANZ to their own business.

The services we offer include:

- fire performance assessment
- fire resistance testing
- reaction to fire testing
- materials durability and performance
- product and system assurance
- structural performance
- thermal performance
- ventilation and energy efficiency
- weathertightness
- research.

Science Leadership

Our work links New Zealand to the best expertise and knowledge nationally and globally. Good science leadership is key to BRANZ as a research organisation to drive robust evidence based knowledge that supports improving New Zealand's built environment.

The Building Better Homes, Towns and Cities | Ko ngā wā Kāinga hei Whakamāhorahora National Science Challenge has an important role to play within that.

The National Science Challenge is looking at new scientific approaches and collaboration between researchers from differing disciplines and research organisations. A key strength of the programme is the size, breadth of expertise and willingness of the team to look at old issues with new perspectives.

BRANZ's role as hosts helps ensure the challenge has a practical and applied focus between science and the building and construction sector. The first independent research organisation to host a National Challenge, BRANZ is passionate about lifting standards, challenging the status quo and driving the construction sector forward.

On the world stage our researchers are regular speakers ensuring New Zealand and our built environment is part of the global conversation on construction issues and the solutions.

www.buildingbetter.nz

BRANZ DIRECTORS

BRANZ Incorporated and BRANZ Limited are governed by directors with extensive building and construction, science, business and senior public-sector expertise.

Five directors of both BRANZ Incorporated and BRANZ Limited are elected by the Building Research Advisory Council (BRAC). In turn, the elected board can appoint up to three independent directors.

At 31 March 2018, the BRANZ Board has seven directors.

Dr Helen Anderson, QSO

Dr Helen Anderson (Chair) is an independent director of several organisations and former Chief Executive of the Ministry of Research, Science and Technology. She is a chartered fellow of the Institute of Directors in New Zealand (IoD NZ). She joined BRANZ in 2011.

Kevin Stanley

Kevin Stanley (Deputy Chair) has more than 25 years' experience in the construction industry and is currently Managing Director of the Stanley Group. He is a chartered member of IoD NZ and joined BRANZ in 2012.

Pamela Bell

Pamela Bell is the Chief Executive of PrefabNZ Incorporated. She is a member of the MBIE Building Advisory Panel and the Construction Industry Council. She joined BRANZ in 2017.

Alan Bickers, MNZM, JP

Alan Bickers has had a lengthy career in civil engineering, management, consulting and governance. He is experienced with regulatory functions, including building consents and compliance. He is a chartered fellow of the IoD NZ and a past president and distinguished fellow of Engineering New Zealand. As inaugural chairman of the Licensed Building Practitioners (LBP) board for eight years, he was responsible for developing and implementing the LBP scheme. He joined BRANZ in 2015.

Richard Carver

Richard Carver has a background in business leadership, management and governance. Richard is a co-owner of Jennian Homes, Milestone Homes and Construction Marketing Services Ltd. He is also a chartered member of IoD NZ. He joined BRANZ in 2013.

Lesley Haines

Lesley Haines has an extensive public sector and client-focussed background. She formerly headed up the Overseas Investment Office at Land Information New Zealand (LINZ) and is a board member of economic research organisation MOTU. Lesley joined BRANZ in 2014.

Stephen Titter

Stephen Titter combines many years of practical financial and investment experience. He was formerly a senior partner and board member for Ernst & Young (EY), and board member for Real Estate Institute of New Zealand (REINZ). He continues to be a director on several boards, including the Selwyn Foundation. He joined BRANZ in 2014.

BRANZ directors — register of interests

As at 31 March 2018

Helen Anderson

Directorships with
- Dairy NZ Group
- NIWA
- Massey University Council
- Antarctica NZ
- Member, National Council of Institute of Directors
- Lincoln Hub Ltd (Blinc Innovation Ltd)
- Advisory Board, Clearpoint Ltd

Other relevant interests
- Chair, MBIE Building Advisory Panel
- Chair, MBIE Inquiry into the performance of Statistics House

Kevin Stanley

Directorships with
- Stanley Group Ltd & subsidiary companies
- Renovation Masters Ltd
- Tallwood Holdings Ltd

*** Shareholdings in**
- Nivek Holdings Ltd

Other relevant interests
- MD, Stanley Group

Pamela Bell

Other relevant interests
- CEO, PrefabNZ (party to Challenge Partner under NSC11)

Alan Bickers

Directorships with
- Jayal Enterprises Ltd
- Trustpower Ltd
- Trustpower Insurance Ltd

*** Shareholdings in**
- Trustpower Ltd (including subsidiaries in NZ & Australia)

Other relevant interests
- Deputy Chair, Inquiry into East-West Link Board

Richard Carver

Directorships with
- Construction Marketing Services Ltd
- Jennian Holdings Ltd and other associated Jennian companies
- Milestone Holdings Ltd and other associated Milestone companies
- Productspec Ltd
- Renovation Masters Ltd

*** Shareholdings in**
- Construction Marketing Services Ltd via a trust
- Jennian Holdings Ltd via a trust
- Mstone Holdings Ltd and other associated Milestone Ltd Companies
- Construction Marketing Services Ltd has a 100% shareholding in Productspec Ltd
- Renovation Masters

Other relevant interests
- Master Builders Residential Working Group

Lesley Haines

Directorships with
- Motu Economic and Public Policy Research (from August 2016)
- Acting Director, Motu

Stephen Titter

Directorships with
- American Chamber of Commerce in NZ, Inc
- Guilford Investments Ltd
- Selwyn Foundation
- Heritage Trustee Company Ltd

Other relevant interests
- Business Strategy Advisor, Jennian Group

Standard disclosure statement to be affirmed at the beginning of every Board meeting:
It is recognised that some members of the BRANZ Board represent companies or organisations or interests that are, or may be, in competition with those of other Board members. Meetings of the BRANZ Board and communications between members of the Board will not be used as a forum for unlawful collusion or anti-competitive conduct.

* Disclosure of significant shareholdings only, e.g. not shares held by family trusts.

Executive team

Chelydra Percy
Chief Executive

Chelydra joined BRANZ in 2013. Prior to starting with BRANZ, Chelydra held a range of leadership roles with science and innovation organisations such as Callaghan Innovation, KiwiStar Optics and Scion. Chelydra has also worked in the electricity supply and telecommunication industries. She is a graduate of Victoria University of Wellington and a Companion of Engineering New Zealand.

Name	Position
Laurel Lee Berkett	PA to CEO/Company Secretary
Richard Capie	General Manager, Research Investment
Janet Geritzlehner	Human Resources Manager
David Johnson	General Manager, Consultancy Services
Chris Litten	General Manager, Industry Research
Kaetrin Stephenson	General Manager, Corporate Services

Board remuneration

Directors' fees for the BRANZ Group are reviewed annually. The Board seeks independent advice to help with this process. The Board confirmed at the July 2017 annual meeting that fees would be increased. The Board also agreed to an increase in the Building Research Advisory Council (BRAC) honoraria.

BRANZ directors' fees

Board roles	Annual fees
Chair	$54,000
Deputy Chair	$33,500
Director	$27,000
Committee chair	$6,250
Representative on external board	$6,250

BRAC honoraria	Annual fees
Chair	$2,900 (per meeting)
Members	$1,200 (per meeting)

Building Research Advisory Council

The Building Research Advisory Council plays a vital role in ensuring BRANZ's accountability and responsiveness to the New Zealand building and construction industry.

The Council meets twice a year to elect the BRANZ Board and advise on industry issues for BRANZ's consideration.

BRAC has 17 members representing 14 nominating bodies from the industry and trades, the business sector, consumers and the government.

In 2017/18, BRAC welcomed four new members:

- John Beveridge, representing the Building Industry Federation
- Mike Craig, representing the New Zealand Certified Builders Association
- Don Tilbrook, representing Civil Contractors New Zealand
- Jon Williams, representing the Property Council of New Zealand.

All four were appointed in July 2017.

Name	Nominee of
John Melhuish (Chair)	New Zealand Institute of Architects
John Macdonald (Deputy Chair)	Registered Master Builders Association
Simon Barber	Registered Master Builders Association
Jacqui Bensemann	New Zealand Specialist Trades Contractors Federation
Anna Butler	Ministry of Business, Innovation and Enterprise
Michael Davis	New Zealand Institute of Architects
Renelle Gronert	Housing New Zealand Corporation
Marshall Hudson	Business New Zealand
Ian McCormick	Local Government New Zealand
Alistair Miles	Business New Zealand
Grant Price	New Zealand Specialist Trades Contractors Federation
Richard Sharpe	Engineering New Zealand
Bill Whitley	Consumer New Zealand


YOU

FINANCIAL PERFORMANCE

The BRANZ Group derives its total income from a combination of the Building Research Levy, government science funding and commercial services. We have a responsibility to ensure wise stewardship of this funding to ensure our continued support of a better built environment for all New Zealand. Through prudent financial management and a long-term focus BRANZ safeguards New Zealand's investment in building research for the future.

OUR FINANCIAL PERFORMANCE

The BRANZ Group derives its total income from a combination of the Building Research Levy, government science funding and commercial services.

Total income for 2017/18 was $35.66 million. This consisted of:

- $19.83 million from the Building Research Levy to fund industry research and knowledge transfer
- $7.57 million from commercial services
- $7.21 million to fund NSC 11 research
- $1.06 million of other income.

This compares with $29.65 million for the previous year.

Expenses were directly managed, which resulted in spending of $32.24 million for the 2017/18 financial year. This was used to operate the business, directly deliver research outcomes, deliver the research under NSC 11, inform the industry and invest with other research providers. Expenditure in the previous year amounted to $26.32 million.

This was the second year of BRANZ hosting the 11th National Science Challenge (NSC 11): Building Better Homes, Towns and Cities, which is valued at $23.58 million over three years. By 31 March 2018, contracts were under way for all six strategic research areas and $10.41 million had been invested.

A breakdown of the BRANZ Group financial results can be viewed on the following pages.

Long-term Levy utilisation policy

BRANZ gets its research income from Building Research Levy receipts, which are directly linked to the levels and values of building consents. This means Levy income is subject to the same boom-bust cycles as the industry.

BRANZ has a long-term Levy utilisation policy in place that helps manage these ups and downs in Levy income. It uses a 10-year model to create a stable, sustainable platform for BRANZ to invest the Building Research Levy effectively. In practice, this means when Levy income increases, BRANZ is prudent around expanding its investment. Then when Levy income decreases, BRANZ doesn't have to make unnecessary or drastic cuts.

The policy sets out how BRANZ will effectively manage the Levy by:

- determining a Baseline Levy Investment Sum using the 10-year model – this is incorporated into the annual BRANZ Group budget for investment in Levy-funded activities
- investing the Baseline Levy Investment Sum in internal and external research and knowledge dissemination
- investing the Levy in an open, transparent and contestable way
- ensuring that any investment in core internal capability is linked to BRANZ's long-term strategic priorities
- investing so as to avoid unnecessary duplication of capability and facilities across New Zealand
- ensuring availability of funding for maintenance and investment in property, plant and equipment
- maintaining appropriate cash reserves.

The long-term Levy utilisation policy is reviewed biannually.

Cash reserves

The BRANZ Group has cash reserves of $26.94 million at 31 March 2018. This balance includes $3.93 million of NSC 11 funding which has yet to be spent. The Board manages and allocates cash reserves across the key areas below. Over the next two to five years, the investment in capital assets will significantly reduce cash reserves to normal operating levels. All funds and the level of cash reserves are held in accordance with the BRANZ Group investment and reserves policy.

Funding for investment in property, plant and equipment

BRANZ funds the maintenance and development of facilities, at Judgeford and elsewhere in New Zealand. A Campus and Asset Management Plan has been adopted by the Board to ensure that our facilities meet the industry research and testing needs for the future. The plan identified more than 20 projects that are required to retire, replace and refurbish ageing property, plant and equipment over the next four to seven years.

In the next two to five years, around $40–45 million of investment in this plan will be required. A detailed investment case is developed for each project in the plan. During the year, investment totalling $2.43 million was approved for projects which enable and support the wider redevelopment of the Judgeford campus. The projected level of cash reserves ensures this work can be undertaken without seeking additional funding from industry or the government.

Critical and industry issues

BRANZ also needs the ability to respond to critical issues affecting the industry. Provision of $1 million is made in the cash reserves for this. For example, in the aftermath of the Canterbury earthquakes, BRANZ was able to draw on its reserves for critical issue funding even while the Group was running a deficit.

During the year, BRANZ has continued to invest in Artisan, a multi-year transformative initiative to develop a modern technology solution to perform the traditional 'clerk of works' function. BRANZ has also taken a strategic role in leading the Industry Transformation Agenda and provided seed funding to support this initiative. Both these initiatives are supported from cash reserves.

Emergency operating costs

BRANZ also ensures it holds enough cash in reserve to be able to access a minimum of three months' operating costs in an emergency. This provision is currently $5.5 million. Should the need arise, the cash reserves would help to cover these funding requirements.

Cash float to fund day-to-day operations

BRANZ has cash float reserves in keeping with normal business practice. This currently stands at $2.5 million. These funds are used to cover day-to-day activities.

Independent review

An independent review of our approach to reserves was commissioned in 2014 to ensure the levels held are appropriate. The review noted that our approach is consistent and in line with other organisations similar to BRANZ.

Building Research Association of New Zealand Inc.

Summary statements of comprehensive income

For the year ended 31 March 2018

	Group	
	2018 $	**2017 $**
Operating income		
Building Research Levy Act levies	19,828,287	18,436,802
Commercial work fees	7,568,867	7,204,726
National Science Challenge 11 funding	7,205,856	3,199,897
	34,603,010	28,841,425
Other income		
Interest received	1,056,953	809,995
Gain on disposal of assets	1,911	2,101
	1,058,864	812,096
Total Income	**35,661,874**	**29,653,521**
Expenditure		
Personnel costs	11,721,575	11,164,096
Other operating costs	20,518,330	15,157,724
Total expenditure	**32,239,905**	**26,321,820**
Surplus before income tax	**3,421,969**	**3,331,701**
Income tax (expense)/benefit	(185,650)	(197,324)
Surplus for the year	**3,236,319**	**3,134,377**
Total comprehensive income for the year	**3,236,319**	**3,134,377**

Building Research Association of New Zealand Inc.

Summary statements of changes in equity

For the year ended 31 March 2018

	Group		
	Foreign currency translation reserve $	**Retained earnings $**	**Total equity $**
Balance at 1 April 2016	31,561	34,728,557	34,760,118
Movement for year	(1,641)	3,134,377	3,132,736
Balance at 31 March 2017	**29,920**	**37,862,934**	**37,892,854**
Balance at 1 April 2017	29,920	37,862,934	37,892,854
Movement for year	(3,234)	3,236,319	3,233,085
Balance at 31 March 2018	**26,686**	**41,099,253**	**41,125,939**

Building Research Association of New Zealand Inc.

Summary statements of financial position

As at 31 March 2018

	Group	
	2018 $	**2017 $**
Assets		
Current assets		
Cash and cash equivalents	3,264,387	3,407,228
Term deposits	23,680,000	25,980,000
Corporate bonds	3,479,493	0
Other current assets	3,700,443	3,592,469
Total current assets	34,124,323	32,979,697
Non-current assets		
Property, plant & equipment	11,599,260	11,978,366
Intangible assets	2,483,822	111,568
Deferred tax assets	41,909	0
Total non-current assets	14,124,991	12,089,934
Total assets	48,249,314	45,069,631
Liabilities		
Current liabilities		
Trade and other payables	1,673,673	1,888,931
Other current liabilities	5,324,357	5,157,714
Total current liabilities	6,998,030	7,046,645
Non-current liabilities		
Deferred tax liability	0	2,317
Other non-current liabilities	125,345	127,815
Total non-current liabilities	125,345	130,132
Total liabilities	7,123,375	7,176,777
Equity		
Total equity	41,125,939	37,892,854
Total equity and liabilities	48,249,314	45,069,631

Building Research Association of New Zealand Inc.

Summary statements of cash flows

For the year ended 31 March 2018

	Group	
	2018 $	**2017 $**
Net cash from/(used in) operating activities	3,585,585	7,444,495
Net cash from/(used in) investing activities	(3,728,426)	(10,552,298)
Net cash from/(used in) financing activities	0	0
Increase/(decrease) in cash and cash equivalents	(142,841)	(3,107,803)
Cash and cash equivalents at 1 April	3,407,228	6,515,031
Cash and cash equivalents at 31 March	**3,264,387**	**3,407,228**

Building Research Association of New Zealand Inc.

Notes to the summary financial statements

For the year ended 31 March 2018

1 REPORTING ENTITY

Building Research Association of NZ Incorporated (Inc.), "the Parent", is an incorporated society registered under the Incorporated Societies Act 1908. The address of the Parent's registered office is 1222 Moonshine Road, Judgeford, Porirua.

The consolidated summary financial statements of Building Research Association of NZ Inc. as at and for the year ended 31 March 2018 are presented and comprise the Parent and its subsidiaries (together referred to as the "Group").

Building Research Association of NZ Inc.'s primary purpose is promoting scientific or industrial research for the building and construction industry.

These summary financial statements and the full special purpose financial statements were authorised for issue by the Board of Directors on 26 June 2018.

2 BASIS OF PREPARATION

Statement of compliance

The summary financial statements are an abridged version of the full special purpose financial statements. Their purpose is to provide an overview and as such do not provide an understanding as complete as the full special purpose financial statements. The disclosures included in these summary financial statements have been extracted from the full special purpose financial statements.

The full special purpose financial statements have been prepared in accordance with the accounting policies set out within the full special purpose financial statements. The full special purpose financial statements have been audited and the auditor has issued an unqualified audit report.

Basis of Measurement

The summary financial statements are prepared on the historical cost basis. The accounts are prepared on a going concern basis.

Presentation currency

These summary financial statements are presented in New Zealand dollars ($), which is the functional currency of the Parent and BRANZ Limited. BRANZ Pty Limited's functional currency is Australian dollars.

Comparative Restatement

Where necessary, comparative figures may have been restated to facilitate comparison and to comply with current year classifications.

3 CONTINGENCIES

The Group had no contingent liabilities as at 31 March 2018 (2017: none).

4 RELATED PARTIES

Group entities	Country of incorporation	Ownership interest	
		2018 %	2017 %
BRANZ Limited	New Zealand	100	100
BRANZ Pty Limited	Australia	100	100

Building Research Assocation of NZ Inc. charges rent to BRANZ Limited for the use of property, plant and equipment as well as for its share of the Group CEO remuneration costs and other advisory services provided. In 2018 this amounted to $1,819,200 (2017: $1,605,538).

BRANZ Limited charges fees for research work and administration services carried out for Building Research Association of NZ Inc. BRANZ Limited also charges Building Research Association of NZ Inc. for its share of the Group Executive Management Team costs, provision of accounting, IT, support, health and safety, and quality services, as well as its share of insurance and marketing costs. In 2018 this amounted to $12,405,877 (2017: $12,288,188). All charges are reviewed by the Board on an annual basis.

BRANZ contracts with construction and research organisations to which BRANZ directors are either related or are also directors. Transactions undertaken with these organisations are entered into on an arm's length basis. Where the director has proximity to the transaction, disclosure is made below.

During the year, BRANZ Inc. provided funding of $10,000 to PrefabNZ Incorporated, of which Pamela Bell is Chief Executive.

5 SEGMENTAL REPORTING

To provide greater transparency to the reader we have provided an analysis of the Group's core business and the National Science Challenge 11 as provided below:

NSC 11 funds are paid to BRANZ on a quarterly basis by the Ministry of Business, Innovation and Employment. The funds received are held in deferred revenue on the balance sheet until recognised as revenue. Revenue is recognised in the profit or loss at the time expenses are incurred. The deferred revenue is recorded as a current liability as BRANZ have an obligation to return all funding not spent and for which contractual liabilities have not been incurred at the date of termination or finalisation of the contract.

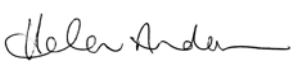
	Group		
	NSC 11 2018 $	BRANZ 2018 $	Total 2018 $
Revenue	7,205,856	28,456,018	35,661,874
Expenses	(7,205,856)	(25,034,049)	(32,239,905)
Surplus before income tax	0	3,421,969	3,421,969
Prepaid expenses	382,527	401,597	784,124
Deferred revenue	(3,927,775)	(678,432)	(4,606,207)
Other net assets	0	44,948,022	44,948,022
Net assets/ (liabilities)	(3,545,248)	44,671,187	41,125,939

	Group		
	NSC 11 2017 $	BRANZ 2017 $	Total 2017 $
Revenue	3,199,897	26,453,624	29,653,521
Expenses	(3,199,897)	(23,121,923)	(26,321,820)
Surplus before income tax	0	3,331,701	3,331,701
Prepaid expenses	367,811	311,092	678,903
Deferred revenue	(4,027,328)	(579,700)	(4,607,028)
Other net assets	0	41,820,979	41,820,979
Net assets/ (liabilities)	(3,659,517)	41,552,371	37,892,854

6 SUBSEQUENT EVENTS

No significant subsequent events have occurred after balance date.

These summary financial statements are approved for and on behalf of the Board of Directors by:



Helen Anderson
Board Chair

26 June 2018

Richard Carver
Chair, Audit and Risk Management Committee
26 June 2018

Chartered Accountants

Independent Auditor's Report

To the Members of Building Research Association of New Zealand Incorporated

The summary financial statements on pages 56 to 61, which comprise the summary statement of financial position as at 31 March 2018, the summary statement of comprehensive income, summary statement of changes in equity and summary cash flow statement for the year then ended, and related notes, are derived from the audited consolidated special purpose financial statements of Building Research Association of New Zealand Incorporated (the "Incorporated Society" or the "Group") for the year ended 31 March 2018. We expressed an unmodified audit opinion on those consolidated special purpose financial statements in our report dated 26 June 2018. Those consolidated special purpose financial statements, and the summary financial statements, do not reflect the effects of events that occurred subsequent to the date of our report on those financial statements.

The summary financial statements do not contain all the disclosures made in the full special purpose financial statements. Reading the summary financial statements, therefore, is not a substitute for reading the audited special purpose financial statements of the Group.

This report is made solely to the Incorporated Society's members, as a body. Our engagement has been undertaken so that we might state to the Incorporated Society's members those matters we are required to state to them in our report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Incorporated Society and the Incorporated Society's members, as a body, for our work, for this report, or for the opinions we have formed.

Directors' Responsibilities

The directors are responsible for the preparation of summary financial statements in accordance with the accounting policies contained in the consolidated special purpose financial statements.

Auditor's Responsibilities

Our responsibility is to express an opinion on the summary financial statements based on our procedures, which were conducted in accordance with International Standard on Auditing (New Zealand) (ISA(NZ)) 810, "Engagements to Report on Summary Financial Statements."

Other than in our capacity as auditor we have no relationship with, or interest in, the Group.

Partners and employees of our firm may deal with the Incorporated Society on normal terms within the ordinary course of trading activities of the business of the Incorporated Society.

Opinion

In our opinion, the summary financial statements derived from the audited consolidated special purpose financial statements of Building Research Association of New Zealand Incorporated for the year ended 31 March 2018 are consistent, in all material respects, with those financial statements.

Ernst + Young

26 June 2018
Wellington

Acknowledgements

Photograph on page 28 courtesy of CPB-HEB Joint Venture.

Photograph on page 29 courtesy of the NZ Transport Agency.

Governance introduction on page 45 from the UK Corporate Governance code, Financial Reporting Council.

APPENDIX

LEVY INVESTMENTS IN 2017/18

These were the new Building Research Levy investment decisions made in 2017/18.

The total project value (operating and capital expenses) is given. Note: these amounts are subject to change. For a full list of Levy-funded projects under way this year, refer to Levy in Action 2017/18.

** Shaded content denotes projects led by external partners.*

Project	Total budget $
Medium-Density Housing (MDH) programme	
Medium-Density Housing (MDH) programme	
Community acceptance of MDH	350,000
Industry perspectives on MDH consenting issues	87,000
MDH future first-home buyers	280,000
MDH programme communication	50,000
MDH programme leadership	110,000
MDH technical issues	130,000
Residents' perspectives of maintaining MDH	120,000
Understanding resource consent processes in New Zealand	92,000
Exceeding the minimum programme	
Accurately calculating the thermal performance in timber-framed MDH across New Zealand	98,000
Exceeding the minimum for volume home builders and their clients	79,000
Exceeding the minimum programme communication	50,000
Exceeding the minimum programme leadership	110,000
Getting the stated performance in higher-specified windows – Tackling the window-wall junction	320,000

Project	Total budget $
How do we encourage consumers and industry to exceed the minimum?	100,000
Supporting informed decision-making on retrofitting insulation – Advice to landlords and homeowners	99,000
Tools for young people to understand how they can improve home performance	100,000
Eliminating quality issues programme	
Awareness of solutions	150,000
Eliminating quality issues programme communication	50,000
Eliminating quality issues programme leadership	110,000
Knowing enough to ask	200,000
Measuring new-build quality	170,000
Procuring for quality builds	250,000
Warmer, drier and healthier buildings programme	
Building a team with He Kainga Oranga (Housing and Health Research Programme)	630,000
Chemical contamination of building materials	900,000
Corrosion rates in vented cavities	202,000
Feasibility of an updated residential energy-use study	290,000
Fungal exposures in New Zealand homes	380,000
Keeping our children warm and dry – Evidence from Growing Up in New Zealand	721,000
Model buildings for the next generation of New Zealand Building Code	1,670,000
Pollutant levels in modern New Zealand homes and offices	370,000
Roof ventilation calculator	250,000
Roof ventilation – Risk-analysis matrix for designers and councils	485,000
Smart ventilation and indoor environmental quality	1,250,000
Warmer, drier and healthier buildings programme communication	50,000
Warmer, drier and healthier buildings programme leadership	130,000
Development of new research programmes	
Fire-safe buildings for all New Zealanders: programme scoping	185,000
Low-carbon transition: programme scoping	150,000
Strategic initiatives	
*Artisan	1,232,900
*Industry Transformation Agenda	610,000

*investment in 2017/18 only

Project	Total budget $
Standalone research	
Alternative tenure models	100,000
ArchEngBuild 2018	98,000
Better post-disaster projections	100,000
BIM initiative through the BIM Acceleration Committee	250,000
Building energy end-use study (BEES) 2	60,000
Built-environment carbon budget	185,000
How can New Zealand construction deliver low-to zero-impact buildings	1,575,000
Combustible facade fire safety	1,030,000
Cost-benefit analysis methodologies – An exploratory study on indoor environmental quality	150,000
Development of a test method for plasterboard sheet lining screws	20,000
Fire safe use of timber construction 2	1,120,000
Flammable refrigerants fact sheets	19,000
Good Practice Guide: Waterproof membrane decks	100,000
House Condition Survey: communication	60,000
House Condition Survey: contributing to national housing quality data and information needs	510,000
House foundations on sloping sites	52,000
Housing the future New Zealand	150,000
Materials within geothermal environments: continuation	440,000
Mining Kaikoura earthquake claims data	75,000
New editions in the *Building Basics* series	150,000
New Zealand guidelines for assessing and managing asbestos in soil: communication	25,000
Pre-work: revision of NZS 3604	120,000
Pressurisation system effectiveness: pilot study	116,000
Regional waste auditing – Waste flows and composition	175,000
Robust building system testing	50,000
Scholarship Andrew Walmsley: Men's health and suicide prevention within the construction industry	75,000
Scholarship Armano Papageorge: Mass customisable and structurally optimised building elements with freeform 3D printing	75,000
Scholarship Emily Newmarch: Performance of thermal envelopes in New Zealand extreme climates	20,000
Scholarship Gerard Finch: Prefabricated architecture for a circular materials economy	75,000
Scholarship Glen Stricot-Tarboton: materials budget	32,000

Project	Total budget $
Scholarship Glen Stricot-Tarboton: Robotic arm prefab panels	20,000
Scholarship Jono MacIntyre: Predicting structural fire severity: an update	75,000
Scholarship Kimberley Russell: The triple constraint – Identifying successful BIM procurement	20,000
Scholarship Mikayla Heesterman: Robotic connections – Customisable joints for timber construction	20,000
Scholarship Nicole Allen: Multi-volcanic hazard impact assessment for residential buildings in the Auckland volcanic field	75,000
Scholarship Olivia Whyte: Sustainable urbanism and co-housing in the New Zealand context	20,000
Scholarship Philip Penn: How detailed a BIM model needs to be to obtain accurate material qualities for houses	10,000
Scholarship Sandi Sirikhanchai: Balancing building energy consumption and the electrical grid	20,000
Scholarship Sanjeev Ganda: A lifecycle environmental-impact assessment of thermal envelopes for residential buildings	20,000
Scholarship Tayler Hubber-Davis: Integrating augmented reality with BIM	20,000
Seismic performance of precast concrete floors	610,000
Small-scale greywater	42,000
Structural adhesives work	1,005,000
Support for scoping a precast concrete floors research programme	50,000
The built environment and climate change options for a resource-efficient economy	95,000
Understanding the construction cost gap	150,000

OUR

THANKS TO

YOU

A huge thank-you to the BRANZ team for your tireless hard work in supporting the industry with leading-edge science. It is your knowledge and expertise that helps shape our industry and its future delivery.

Thanks also to the BRANZ Board and our BRAC colleagues. Your sage advice and commitment to shaping BRANZ's vision ensured our work focussed on the reality of New Zealand's construction industry while keeping people at the heart of what we do.

Sincerest thanks to our many partners, clients and collaborators in industry, government and the wider research community. Your contributions are vital as together we work towards a vibrant, forward-thinking, people-focussed building and construction sector.

Lastly thank you to the construction sector. Your willingness to reach for better, to answer the call to solve New Zealand's housing issues and to change where it is needed, sets all of us on a path to do the best we can for all New Zealanders. It has been a challenging, eventful, yet highly rewarding 12 months. We look forward to keeping up the momentum in the coming year for the betterment of New Zealand's built environment.

Inspiring the industry to provide better buildings for New Zealanders

Chelydra Percy
CHIEF EXECUTIVE OFFICER

BRANZ Incorporated

Address: 1222 Moonshine Road, Judgeford, Porirua City 5381, New Zealand
Phone: +64 4 237 1170 **Fax:** +64 4 237 1171 **Email:** branz@branz.co.nz

www.branz.nz